Focus on Effects of Offsite Waste at Hanford

Ecology's View

Ecology opposes bringing offsite waste to the Hanford Site. All offsite waste will be disposed of in lined landfills. The draft EIS shows that offsite waste will contribute substantially to potential onsite inventories of iodine-129 (I-129) and technetium-99 (Tc-99) and would affect Hanford's groundwater. At the boundary of the Integrated Disposal Facility East the impact from offsite waste would be substantially above drinking water standards.

USDOE's preferred alternative defers a decision on offsite waste until at least when the Waste Treatment Plant becomes operational (due in 2022 under a proposed consent decree). At that time, USDOE must do another EIS if it again considers disposing of offsite waste at Hanford.

Ecology favors a tank closure alternative that leaves the smallest amount of I-129 and Tc-99 in landfills after cleanup is finished. The I-129 and Tc-99 from offsite waste poses an increased risk.

What the Draft EIS Says

How Much

The draft EIS lists the potential volumes and source locations (Table D-80 in Appendix D; page D-131-133):

62,000 cubic meters of low-level waste (LLW).

20,000 cubic meters of mixed low-level waste (MLLW).

These volumes were set forth in the Record of Decision for the Solid Waste Program (69 FR 39449; 2004). These volumes are maximum estimates.

MORE INFORMATION

The Tank Closure & Waste Management Environmental Impact Statement (EIS) will support decisions for the final cleanup of much of the waste at Hanford -- the tank farms, the rest of the waste in the tanks, and the Fast Flux Test Facility.

The draft EIS also analyzes impacts to groundwater from waste disposal activities to determine whether it is safe for Hanford to dispose of more wastes.

Comments accepted through March 19, 2010.

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Waste Inventories

The offsite waste will not be processed at the Hanford Site – it will go straight to a landfill on Hanford. Some of the tank inventory will also be landfilled onsite. The tank closure alternatives define how much will be landfilled, and where. Table 1 lists the inventory proposed to come to Hanford.

Table 1. Offsite LLW and MLLW waste inventories from draft EIS (Table D-81 and Table D-82 in Appendix D).

Radionuclides	I-129	Tc-99	C-14	U-233, -234, -235,-238	Pu-239, -240	Cs-137	Sr-90
TOTAL LLW & MLLW (Ci)	15.3	1,800.0	6,130.0	377.0	545.0	638,000.0	712,000.0

The table shows that:

Strontium-90 and cesium-137 are the largest inventories (by radioactivity) in the offsite waste. These radionuclides have half-lives of about 30 years and will decay away over a 600-year period.

The proposed inventories of Tc-99 and I-129 are not large, but these contaminants drive the risk to human health because they are long-lived and very mobile.

About 15 Curies of iodine-129 can be expected from offsite sources. For comparison, the tank farms contain about 48.2 Curies.

About 1800 Curies of technetium-99 can be expected from offsite sources. For comparison, the tank farms contain about 29,700 Curies.

Potential Offsite Inventories Related to Tank Closure Alternatives

Future waste management on the Hanford Site depends on offsite inventories and how the tank farms will be closed. Each tank closure alternative creates different waste forms and chemical mixtures.

Ecology's Analysis

Iodine and Technetium Inventories

We compare two waste management alternative groupings that include Tank Closure Alternatives 2B and 3A (TC-2B and TC-3A). These are among the preferred alternatives in the draft EIS. Alternative 2B includes a process to remove Tc-99 from the low-activity waste stream, while Alternative 3A does not. These tank closure alternatives were combined with Waste Management Alternative 2 and FFTF Alternative 2. The comparison includes all onsite and offsite sources.

Iodine-129: The numbers for the different alternatives are identical with 17 percent coming from offsite sources (Figure 1).

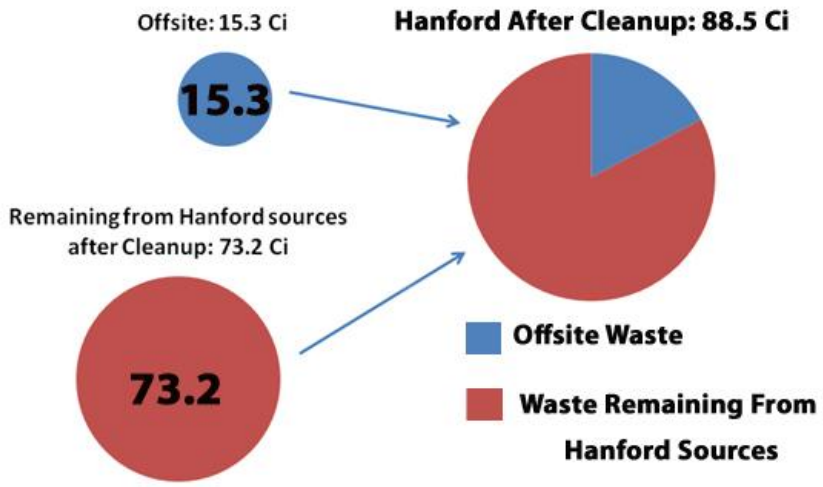

Figure 1: Iodine-129:TC Alternatives 2B and 3A in combination with FFTF Alternative 2 and WM Alternative 2.

Technetium-99: In TC–3A, the remaining inventory onsite will be about ten times larger than for TC-2B because 3A removes technetium. In TC-2B (Figure 2), the offsite waste will almost double the inventory remaining on the Hanford Site. Offsite waste will contribute only 6% of the inventory for Alternative TC-3A (Figure 3).

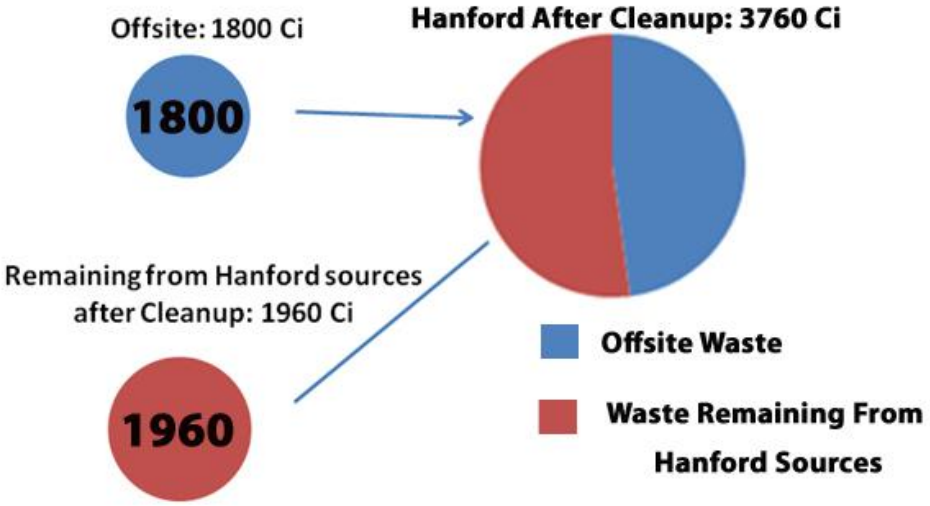

Figure 2: Technetium-99: TC Alternative 2B in combination with FFTF Alternative 2 and WM Alternative 2.

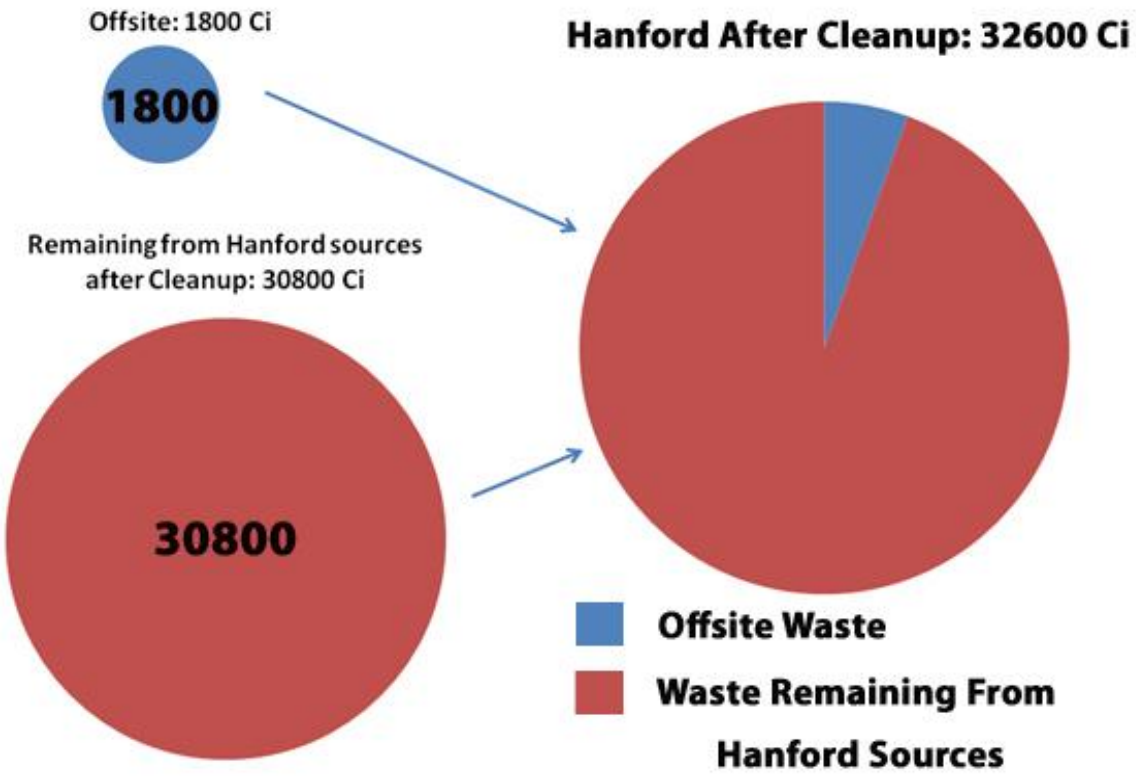

Figure 3: Technetium-99: TC Alternative 3A in combination with FFTF Alternative 2 and WM Alternative 2.

Impact of Offsite Waste to the Groundwater

All Hanford's landfills will release iodine-129 and technetium-99 to the environment. The draft EIS describes how the waste is released to the groundwater in Appendix N (Figure N-87, N-89). The modeling period in the draft EIS for the waste release is 10,000 years.

The speed of the release depends on the waste form. Waste from the Waste Treatment Plant is immobilized in glass forms or perhaps grout (for secondary waste), which delays and slows the release. (The offsite waste comes from many types, no matter what type the offsite waste is in.) The draft EIS shows that it is released to the environment quicker than the waste from Hanford.

If offsite waste comes to the Hanford Site, USDOE would have to develop waste forms that perform much better than those analyzed in the draft EIS.

Iodine-129: The offsite waste contributes 90% of the iodine released to the groundwater (Figure 4) when the offsite waste is combined with waste from both Tank Closure Alternative 2B and Alternative 3A.

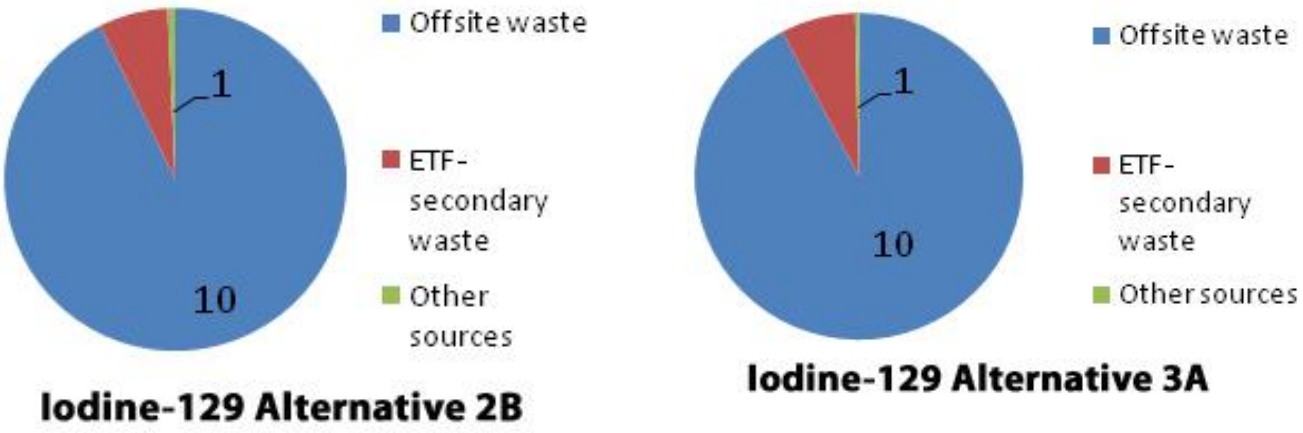

Figure 4: **Iodine-129: TC Alternatives 2B (left) and 3A (right) in combination with FFTF Alternative 2 and WM Alternative 2 (in curies**.)

Technetium-99: The offsite waste contributes 87% of the technetium-99 released to the groundwater (Figure 5) when the waste is combined with waste from Tank Closure Alternative 2B. In TC Alternative 3A, the offsite waste contributes 48% of the released technetium. Hanford's waste release smaller amounts of technetium, and more slowly, because it is in vitrified low activity waste glass.

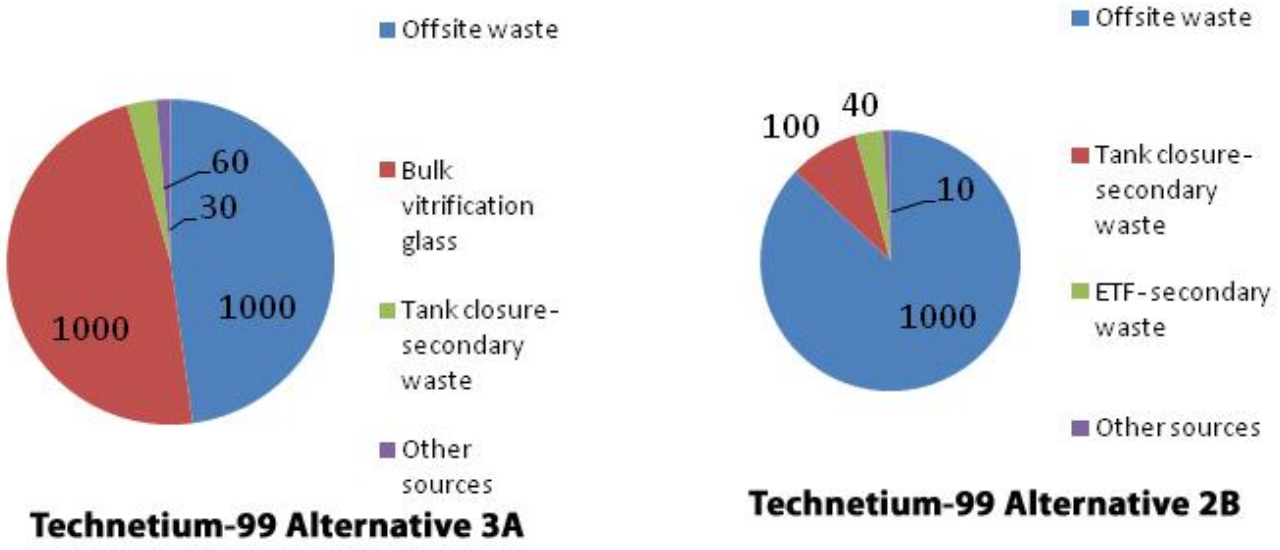

Figure 5: Technetium-99: TC alternative 3A (left) and 2B (right) in combination with FFTF alternative 2 and WM alternative 2 (in curies).

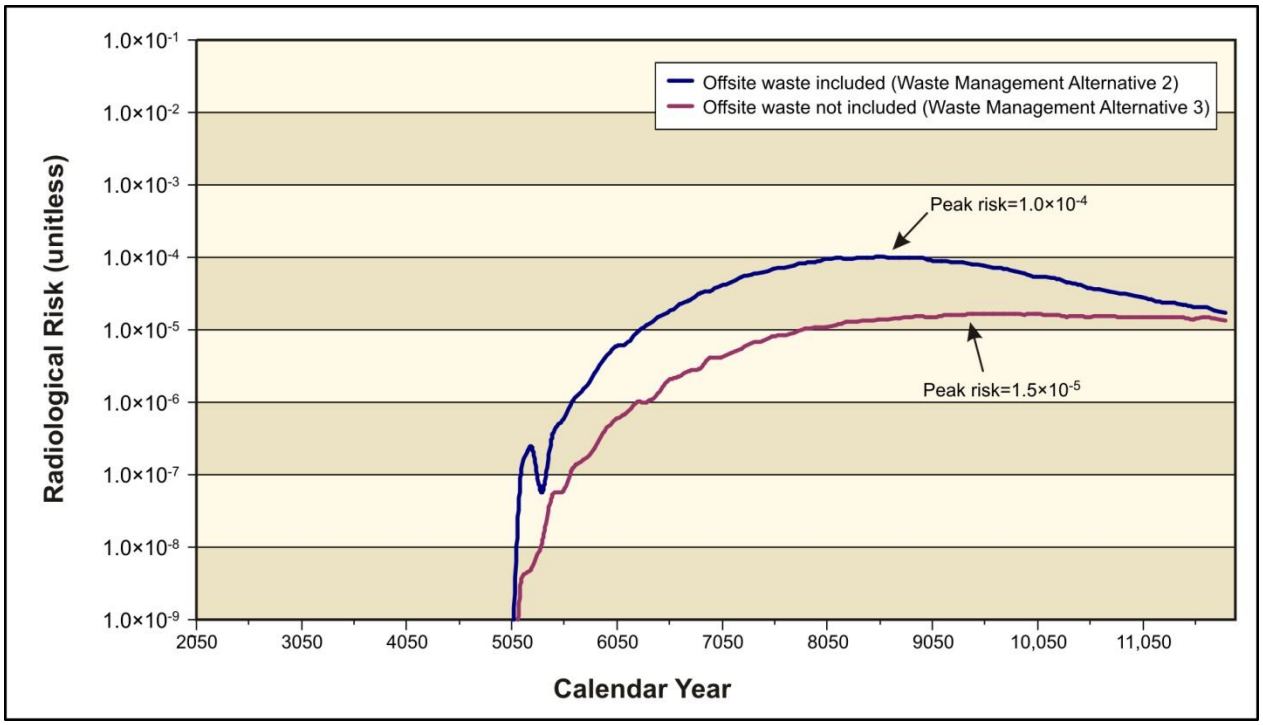

Figure 6. Offsite waste impacts.

Figure S-21 from the draft EIS summary shows the impact of offsite waste disposal at Hanford.

View the TC&WM EIS online at http://www.gc.energy.gov/nepa or www.hanford.gov